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IN REGARD TO THE

Proper Mechanical Treatment

OF

JOINT DISEASES.

To my Brother Practitioners of Medicine and Surgery:

I desire to call your earnest attention to my mode of treating diseases of the joints, especially morbus coxarius, and the corresponding affection of the knee-joint. My object in presenting to you the following extracts from the most prominent medical authorities in America is twofold: *i. e.*, both to lay the mechanical part of the treatment before you, and to assert, at last, my right to the honor of having originated it. On the last point, I would here make but the passing remark, that while in this country a medical fellow-townsman (whose name I need not mention, as it occurs in one of the extracts that follow,) quietly misappropriated, without acknowledgment, the apparatus that I had freely made him acquainted with—in England there are two men fighting, even now,* over the same apparatus, each claiming its invention prior to the introduction by the other, whereas, in fact, both have borrowed it from me. I have always shrunk from bringing myself before the profession so personally; and, indeed, it required no little effort and the full consciousness of its necessity, for the sake of truth and justice, to pen the foregoing sentence; and I hasten to the extracts.

At a meeting of the *New York Academy of Medicine*, the discussion on the Treatment of Morbus Coxarius was opened by Prof. Alfred

* See London *Medical Times and Gazette*, December 21st, 1861, p. 648.

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D. Post,* (See Vol. I., page 196, of the *Bulletin of the Academy*, and *American Medical Times*, No. 17, Vol. II.) Speaking of my method of treatment, he says: "His method is undoubtedly a very great improvement upon *all* others which had preceded it. We have, in the method described by Dr. Davis, the first intimation of extension being carried out in the treatment of this disease, through all its stages, in a manner which was calculated to relieve the sufferings of the patient, to arrest the progress of the disease, and at the same time to allow active exercise in the open air." After describing the apparatus, &c., he says: "There is no question, Mr. President, that Dr. Davis is entitled to the credit of having introduced this method of treatment to the profession." Again: "The methodical application of the treatment is due to Dr. Davis; *and were it not for him, the profession would have known nothing about it.*"

Dr. Gurdon Buck remarked, (*Bulletin*, Vol. I., page 201; *American Medical Times*, No. 18, Vol. II.,) "I will merely say in regard to this particular mode of treatment introduced by Dr. Davis, that it is in constant use at the St. Luke's Hospital, and has been for nearly a year. We have also several cases in progress in children. We have always regarded it as an admirable mode of treatment, and we see the best effects from it. It has been borne with a great deal of comfort. Those who are brought in in the acute stage, scarcely allowing you to touch them, after the application of the weight and pulley for twenty-four or forty-eight hours, are almost entirely relieved of pain. The effect of this relief upon the patients is to improve their general condition. The treatment is being fully tested there, with satisfactory results."

Dr. John Watson, referring to the treatment by the old mode of extension with the long splints compared with mine, said, (*Bulletin*, Vol. I., p. 204; *American Medical Times*, No. 19, Vol. II.,) "From the very hour I read Harris's paper, I have always looked upon it as the best plan of treatment, until the new mode introduced by Dr. Davis came into use, which I highly approve."

Prof. Raphael (*Bulletin*, Vol. I., p. 224; *American Medical Times*,) "did not think it made a great difference, as far as the treatment of the disease was concerned, that all the vexed questions in relation to the pathology should be discussed at such length. It seemed to him

* Prof. Post having been the Chairman of a Committee, appointed by the Section on Surgery, for the express purpose of examining into this subject, (the other members of which were Dr. Gurdon Buck and Prof. Willard Parker,) whose conclusions were unanimous.

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that a proper treatment for the formidable disease was at last favorably introduced in the shape of the new splint. The splint he considered as one of the greatest improvements in surgery that had been made within the last fifty years, anæsthesia alone excepted."

Prof. HENRY H. SMITH, M.D., of Philadelphia, in a letter addressed to me, January 7th, 1862, writes of it "as the best plan of treating the disease, and regards it, as above [before] stated, an improvement worthy of historical record as *the* improvement of this century in surgery."

In the *Philadelphia Medical and Surgical Reporter* of November 23, 1861, p. 178, in a review of the transactions of the American Medical Association, by O. C. GIBBS, M.D., he says: "Perfect rest of the joint, and the removal of friction and pressure of the diseased surfaces by means of extension, are really the all-important objects of treatment. As is generally known, Dr. H. G. DAVIS, (of New York City,) in the spring of 1860, devised [should be, published a full description of,] an instrument, by means of which these ends could be accomplished, and the bedridden patient placed upon his feet without discomfort or injury. Dr. SAYRE has modified this instrument, and, he thinks, greatly improved it. However, as the principles of its action are not altered, the honor of the invention belongs *wholly* to Dr. DAVIS."

In a review of "The Transactions of the American Medical Association," published in the *North American Medico-Chirurgical Review*, page 1,017, Volume V., November, 1861, under the head of "the third and last paper," entitled a "Report on Morbus Coxarius, or Hip Disease, by Lewis A. Sayre, M.D., of New York City," the reviewer, after numerous extracts from the report, for the purpose apparent in the following, says: "These quotations carry to the mind of the reader but one inference, and that is, that the writer of the report first suggested the treatment and devised the instrument, for he positively declares it. Let us see what this instrument is, and who devised it. To do this, let us turn to page 499, where the details of a case commence, in the reading of which we arrive at a seeming solution.

"On page 507 we read a description of the instrument, which is, as we have seen, called his (Sayre's) splint; and we find it to consist of a steel strip, with means of attachment for extending and counter-extending bands, the latter of which is of rubber tubing. The writer goes on to give the directions as to the proper manner of applying the instrument, the style of applying the plaster, bandage, etc. But preceding it all, we find a plate introduced, under which is printed

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'H. G. Davis's Splint for Hip Disease, as manufactured by Otto & Reynders, 58 Chatham Street, N. Y., since 1855,' five years ago, accompanied by a full description, and the proper manner of applying it, and the style of applying the bandages, plaster, etc. The one is just like the other; there is not a single difference in any essential point, and all the directions, as given by the author of the report, are the same as those of the inventor of the original instrument, from whom the reporter learned the use and application of the instrument, as noticed in the quotations on the next page. Seeing this, we are led to examine a little more closely, and we find on page 505, that in November, 1859, a patient came under the care of the reporter, and he desired to make extension of, and still keep up motion in, the affected limb, but was unable to do it. How he succeeded at last, will be seen by the following:

"'He returned to the city under my care, in November, 1859, much improved, but with imperfect motion, and I observed that he always had more or less pain for one or two days after the motion had been applied, which I thought was owing to the fact that I could not keep up *sufficient extension while I was applying the motion.*

"'This was a desideratum I had tried long to accomplish, but never succeeded to my satisfaction until Dr. H. G. Davis, of this city, applied to him one of his instruments, which answered the purpose admirably, and in its construction embraced the very principles I had so long sought to obtain.'"

I must here add, that before my seeing this patient, Dr. Sayre came to my office to "inquire about my mode of treating Hip Disease," saying he had "heard much about it, and would like to have me explain it to him." After conversing upon the principle of treatment, I took him to see a patient near by, that had been under treatment some months, and afforded him every facility in the examination, explaining all the parts and their objects; he expressed himself delighted with the apparatus and the results in the case. By his request, I then went with him to see the patient mentioned in his report, and afterwards applied, before him and several other medical gentlemen, the adhesive plasters and splint, explaining, minutely, the design of all the parts, separately, and as a whole.

It was abundantly evident from his remarks, that he had never had any conception of the principle upon which the treatment was based; the course pursued by him after this, is so well known to the Surgical Section of the New York Academy of Medicine, to the members of the New York Medico-Chirurgical College, and is even made so

manifest in the foregoing review, that I may spare myself the disagreeable task of uttering reproach against him.

The following is an extract from a review of "A Treatise on Diseases of the Joints, by Richard Barwell, etc., etc.," in the AMERICAN MEDICAL MONTHLY, December, 1861:

"Of the chapters on Strumous Articular Osteitis and Hip-Joint Disease, we can say that they, of all others in the book, both please and disappoint us most. We are pleased to find Dr. Barwell follow the right path; we are disappointed to find that he is not fully conscious of the principles on which successful treatment depends; that his appliances are inferior, and that he does not even mention the name of their originator. The attention of the profession at large having been called to the proper mechanical treatment, some six years ago, already, in the editorial columns of the MONTHLY, and numerous communications on the subject having appeared in its pages since, we cannot doubt but that most of its readers are entirely conversant with it; and we had intended, therefore, to dismiss these chapters with the above remark. But as an act of justice to American Surgery, no less than to Dr. Henry G. Davis, of New York, the originator of the treatment under consideration—and in the hope that this notice may meet the eye of the honored author, (for we are confident, from the spirit of honest candor and noble manliness pervading the whole book, that he has not *intentionally* failed 'to give honor where honor is due')—we beg leave to dwell a few moments on the facts of the case. We have for reference only a file of the MONTHLY, and that an incomplete one, at hand, but we think this will prove sufficient for our purpose. We remember that even the pseudo-medical Quarterly, the '*North American Journal of Homœopathy*,' gave the 'old school' doctor, as the Humbugpaths delight, in their mildest moods, to call the regular physician, a willing tribute as amply deserving the appellation 'public benefactor,' several years ago;* and in a recent discussion before the highest professional tribunal in the Empire City of our State, the NEW YORK ACADEMY OF MEDICINE, the claims of Dr. Davis were fully sustained by the most eminent practitioners. [See *Bulletin*, Vol. I., pp. 191 to 224.]

"Both the principle on which the treatment is based, and the apparatus by which it is ordinarily most effectually and conveniently carried out, are referred to in the editorial mentioned, which, as far as we know, is the first published account of either. But Dr. Davis

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[* February, 1857.—ED. MONTHLY.]

had been in the habit of employing the same method in his limited practice for some ten years previously, and whenever occasion offered verbally explained it to his professional friends, and urged its trial upon them. He would enthusiastically dwell upon the revolution which its introduction must work in surgery; upon the benefits it would confer on humanity; the saving of health, of limbs, and life; and would add substantially, that before he published it to the world he wanted to perfect it so that every possible objection should be anticipated and obviated. The then editor of the MONTHLY, Prof. Parker, spoke in the highest terms of Dr. Davis.

"The March, May, and June Nos., 1856, of the MONTHLY, contain a lengthy article by Dr. Davis, on 'Deformities and their Remedies;' and here the whole plan of mechanical treatment, not only for *hip disease*, but also for disease of other joints, lateral curvature of the spine, Pott's disease, wry-neck, bow-legs, and club-feet, is fully laid down. Nay, more even; the advantages and applicability of the same principle in the treatment of fractures,* wounds, and all injuries about the joints, are strongly insisted on. The special treatment under consideration was again taken up at the conclusion of 'A Case of Pott's Disease, with Remarks on Morbus Coxarius, etc.,' MONTHLY, November, 1859; and also in the '*New York Journal of Medicine*,' for the same month, (Nov., 1859,) in an article on 'The Effects of Pressure upon the Ulcerated Vertebræ, and in Morbus Coxarius, and the Relief afforded by Mechanical Remedies, with Cases.' Finally, in April, 1860, he published '*On the Mechanical Means adopted in the Treatment of Morbus Coxarius.* By H. G. Davis, M.D. (*With a Plate.*') From this full and able paper we quote: 'I have delayed bringing the subject of this paper before the profession until time had given me an opportunity, not only to overcome any minor difficulties that might arise, but to test its application, and compare the results with the modes heretofore practiced. It is an unfortunate circumstance that so many new things are hurried before the profession in a crude state, to be condemned or die of neglect, when they could have been highly useful if the inventor or discoverer had taken time to digest and mature his plans, and then apply them until all objections or difficulties should be overcome.' 'Muscular contractions perform an important part in the destruction of a joint,' and

* Dr. Gurdon Buck, of New York City, has fully demonstrated the advantages of the application of the principle to fractures. See *American Medical Times*, and Transactions of the New York Academy of Medicine, Vol. II., Part VII., p. 233.

'*elastic* extension is the true and philosophical method of overcoming muscular contraction.' He tells us he has 'invented an apparatus for applying these principles to diseased hip, knee, and other joints,' 'a method of treating this disease [morbus coxarius] which I have pursued for twelve years; and as it has never been [thoroughly] brought before the profession, it becomes necessary to describe it minutely.' Then follows a lengthy description of the instrument, its application, &c., &c. We should also here notice that he has introduced, with the instrument, an important arrangement of material for all surgical purposes, viz., corrugated cast steel, giving strength with lightness.

"Thus, surgery is indebted to Dr. Davis not only for the invention of an apparatus really yet unimproved upon, but also for the introduction of a method of treatment based on the true pathology of the disease, and the principles upon which successful treatment depends in *all* its stages.

"The essential parts of the apparatus are, simply, means of exerting a *continuous-extending force* on one side, and a resisting, counter-extending one on the other. Many persons cannot comprehend in what really consists the difference between Dr. Davis's apparatus and some of the means previously employed, because the word extension misleads them. They do not make the distinction between the force that fixedly sustains a limb in a position previously more or less extended, and the force that is actually extending all the time; *i. e.*, that exerts a constant pulling power, instead of merely preventing immovably the retrocession of pulling previously exerted. Now this continued or 'elastic' extension, as, merely to distinguish it, it might be called, has been introduced into the treatment of hip-joint disease by Dr. Davis. Whether it is attained by position, or weights, or spring-power, does not change the principle; but Dr. Davis had brought even his mechanical arrangement to perfection before others entered the field. Indeed, priority here has not been attempted to be proved by any one else, as far as we know. Our author candidly tells us that he had used it in private practice for about a month, when, on the 14th of June, 1860, he was allowed to apply it for the first time in Charing Cross Hospital. Early in the year 1860, for a considerable time before the full description in the April No. of the MONTHLY, Dr. Scudder had, at Dr. Davis's request, as we know from his own lips, taken one of the instruments to England, for the purpose of exhibiting it to the profession there, and in Paris. Adhesive plaster and rubber were used by Dr. Davis from the first. The only quotation we will take the space to make is the following, from the AMERICAN MEDICAL

MONTHLY, May, 1856, p. 330: 'There is one point in my mode of making extension which I think, from the long experience I have had in its use, would be an improvement upon the general modes—and it is equally applicable in all extensions and counter-extensions, those of fractures as well as of contracted muscles—viz., the use of rubber as an extending power. This will act steadily and gradually, without any violence, and with very little suffering in comparison with permanent fixtures. When contracted muscle is to be overcome, it steadily wearies it, until it silently comes off conqueror. I would earnestly recommend the profession to give their attention to the use of this article for the accomplishment of extension. What is termed a door-spring is one good form; another, for lighter purposes, is the shirred rubber.'

"The correspondence of this language with that used by our author (page 326, and bottom of page 267,) is quite remarkable.

"We should like to have reproduced here the engravings of the 'Davis Splint,' that we have employed long before any other splint had been brought forward.*

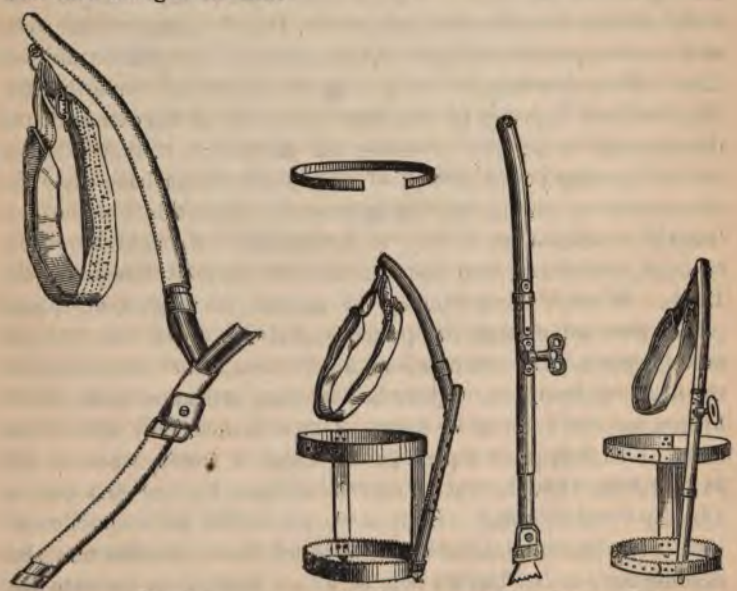

FIG. 1. FIG. 2. FIG. 3. FIG. 4.

[* Figs. 1 and 2 have previously appeared in the MONTHLY. We are not certain that these are the illustrations our reviewer refers to, circumstances rendering his seeing proof-sheets of this article impracticable.—ED.]

"No. 1, an elbow-joint splint. The joint admits of the splint's being shortened during its application. When applied, it is secured straight by a slide. The amount of extension is regulated by the band and buckle at the bottom, or the buckles and cat-gut at top.

"No. 2, the same principle applied to the femur.

"No. 3, the length is varied by a key and ratchet; the key performing the office of a cog-wheel.

"No. 4, the key and ratchet, applied to the thigh portion of No. 2.

"The principle of treatment, concisely expressed, consists but in '*abtraction*' of the joint by *continued-elastic-extension*, securing to the diseased structures support without pressure, and motion without friction. Both of the latter requirements must be satisfied; and though they were equally insisted on by Dr. Davis years ago, already some of the professed improvements on his splint evince the ignorance in this regard (especially as far as refers to motion of the joint) of some prominent members of the profession, even at this day. After Dr. Davis's invention was made, the adaptation of the apparatus to other joints than those he happened to employ it in, hardly entitles a man to any credit; as to the wrist and elbow-joint, we believe ourselves to have been the first to apply the splint.

"Besides the apparatus described by Dr. Barwell, there have been 'invented' modifications of Dr. Davis's splint, more or less extensive, and, *in our opinion*, more or less spoiling rather than improving it, by Drs. Sayre, Andrews, Hamilton, Taylor, E. S. Cooper, Olcott, Vedder, etc. In passing, we may here also state, that the 'Sayre's Splint,' described in the *Edinburgh Medical Journal*, December, 1860, by A. M. Edwards, defeats, by fixating the knee-joint with a cap and strap, one of its first objects.

"Considering how much we have with the above remarks overrun the space to which we were limited, we must add, that all we have said we felt bound to say, in the cause of truth and in justice to our whole profession, as well as to Drs. Barwell and Davis. We shall never cease, we trust, to raise our voice, feeble though it may be, to uphold the principle, '*Palmam qui meruit ferat.*'"

I now proceed to answer the question, "Whether, aside from the possibility of exercise, the freedom from pain, and the general comfort to the patient, a recovery to the normal condition of the diseased joint surfaces can take place under this mode of mechanical treatment?" First, I would remind the profession that this is not to be considered the only remedial measure, although it is by far the most

important. It can positively be said that, without it, a case would seldom recover with a good joint; with it, when the treatment is fully carried out, (for it requires some experience in its application to a given case,) a large per centage will make a perfect recovery, while others will retain the limb much less deformed, and without anchylosis.

Sir Benjamin Brodie, in his work on Diseases of the Joints, gives the probable condition of the articulating surfaces. In his remarks preceding Case No. XLI., he says: "When the ulceration of the cartilages has made very considerable progress, if the patient recovers, so as to preserve the limb, he seldom has the use of the joint afterwards, the bones composing it being united by anchylosis; but if it has been checked in a less advanced stage, even though there may be reason to believe that the cartilages have been extensively destroyed, the patient may retain the natural motion of the joint. Cases will be found in other parts of this volume, in which the bony surfaces were covered by a dense membrane, formed to supply the place of the cartilage which had been destroyed; and I cannot assert that this membrane is never ultimately converted into the true cartilaginous structure. In other instances a compact layer of bone is generated on the carious surface, nearly similar to what is seen in the healthy bone, after the cartilage has been destroyed by maceration. I have many times, in dissection, observed a portion of the cartilage of a joint wanting, and in its place, a thin layer of hard, semi-transparent substance, of a gray color, and presenting an irregular granulated surface. It is probable that in these cases, also, the original disease had been ulceration of the cartilages. In a subject in the dissecting-room, I found no remains of cartilage on the bones of one hip; but, in its place, a crust of bony matter, of compact texture, of a white color, smooth, and having an appearance not very unlike that of polished marble."

At the close of his description of the joint, he says: "The cartilage was everywhere absorbed from the articulating surfaces, and in its place there was a white polished surface, similar to that which has been just described."

There has (as far as I know) been as yet no opportunity of examining *post-mortem* a patient that I have treated for the disease. It is very desirable that the condition of the joint, after recovery, should be ascertained; and anxious that a possibility of arriving at this information should be improved, I would urge upon my medical brethren the importance of their embracing every opportunity of making post-*mortem* examinations for this purpose.

I have deemed it unnecessary to go here more detailedly into the description of the apparatus, and the manner of applying it, further than appears from the preceding extracts, as I have laid this down at length in the *American Medical Monthly* for April, 1860. To this I would refer any one desirous of making himself fully conversant with my invention.

For the same reason, I introduce the following cuts, with only the references of the cases to which they belong, as heretofore published. The cuts, with one exception, were photographed from life.

FIG. 5.

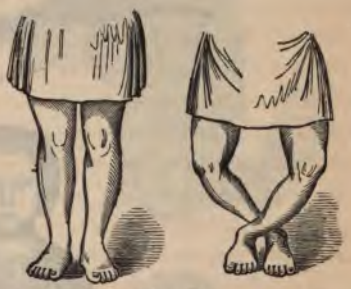

FIG. 6.

FIG. 7.

No. 5. Pott's disease of dorsal and lumbar vertebræ, with perfect paralysis of motion and sensation for more than a year. Reported in *American Medical Monthly*, Nov., 1859, p. 358.

No. 6. Bow-legs. The deformity was so great that the patient stood with the limbs crossed, to relieve the unnatural position of the hip-joints.

No. 7. Pott's disease of cervical vertebra, with paralysis. Reported in *N. Y. Journ. of Med.*, Nov., 1859.

Fig. 8.

No. 8. Hip disease. Patient, when first seen, was lying upon her side, with the limb drawn up, and held by the hand, as represented in cut. Reported in *American Medical Times*, 1860.

FIG. 9.

FIG. 10.

No. 9. The worst deformity of the kind I have ever seen; the entire knee of each limb passed the centre of the body, and the joints were twisted upon themselves. This case was seen by a number of eminent gentlemen, and was considered as affording very little encouragement to the surgeon.

The change exhibited in the cuts was effected in four months, without the use of the knife.

DISLOCATION OF LONG STANDING REDUCED BY A NEW PROCESS.

No. 10. A son of Henry D. Smith, Esq., of Plantsville, Conn., aged 8 years, dislocation of both hips, of some five years' standing; having walked well for some months, when he had paralysis following convulsions, while cutting his teeth.

The head of the right femur was resting in the thyroid foramen; the left, upon the dorsum of the ilium. A reduction of the right femur was attempted by a prominent surgeon in this department, but found to be impossible; this was after extension had been kept up for some weeks. The elastic extension was continued after this, until the head of the femur was withdrawn an inch from the foramen; this length of the attachments about the head allowed of its removal to the acetabulum; here it was confined for two weeks by apparatus, but from the first it manifested no disposition to leave its new locality. He was removed to his home in a neighboring State, where, after a few days, he was so unfortunate as to fall down stairs, dislocating it again; it was some weeks before he again came to the city. The limb had assumed its former position, but was readily brought down and reduced by the same process as at first. It now is in perfectly proper position, and has become a useful member, instead of a hindrance, as formerly.

The left femur has been brought down by extension, and is retained by apparatus. He is now not only able to walk, but most decidedly improved in appearance.

This case is the first in which reduction of an old dislocation was effected, by first elongating the attachments about the head of the bone, through *continued elastic extension*. It opens a new field, and one that affords us much encouragement.

ULCERATION OF THE KNEE-JOINT.

This disease (generally termed "white swelling") has been more discouraging to the profession than when located in the hip-joint. Amputation was formerly considered the only resource, to save the life of the patient; it was therefore a great advance when it was discovered that not only the life, but the limb, could be preserved by exsection of the diseased portion of the joint. How much more valuable, then, must be a mode of treatment which not only preserves the life and limb, but perfectly restores the joint—and this without suffering during the process of cure! This restoration has been accomplished by the plan practiced by me, in a case where the cartilages were destroyed, leaving the articulating surfaces to grate upon each other upon every movement of the joint, and where the system was brought to that point where amputation or exsection becomes necessary.

LATERAL CURVATURE OF THE SPINE.

This deformity arises from several distinct causes, therefore the treatment must be adapted to each variety. Those cases dependent upon muscular causes are remediable by influences acting upon the muscles of the spine. This class I have been accustomed, for the last twenty-five years, to treat by exercising and developing those muscles that were not sufficiently vigorous to sustain the spine in its normal position. This mode of treatment has been recently brought forward as something new, under the popular title of "Swedish Movement Cure." That it is not entitled to any consideration as a novelty, is evident from the fact that it has been in use in this country for twenty-five years by myself; and how much longer by others, I am unable to say. My apparatus, as applied to lateral curvature, embraces the principle of elastic extension.

HENRY G. DAVIS, M.D.,

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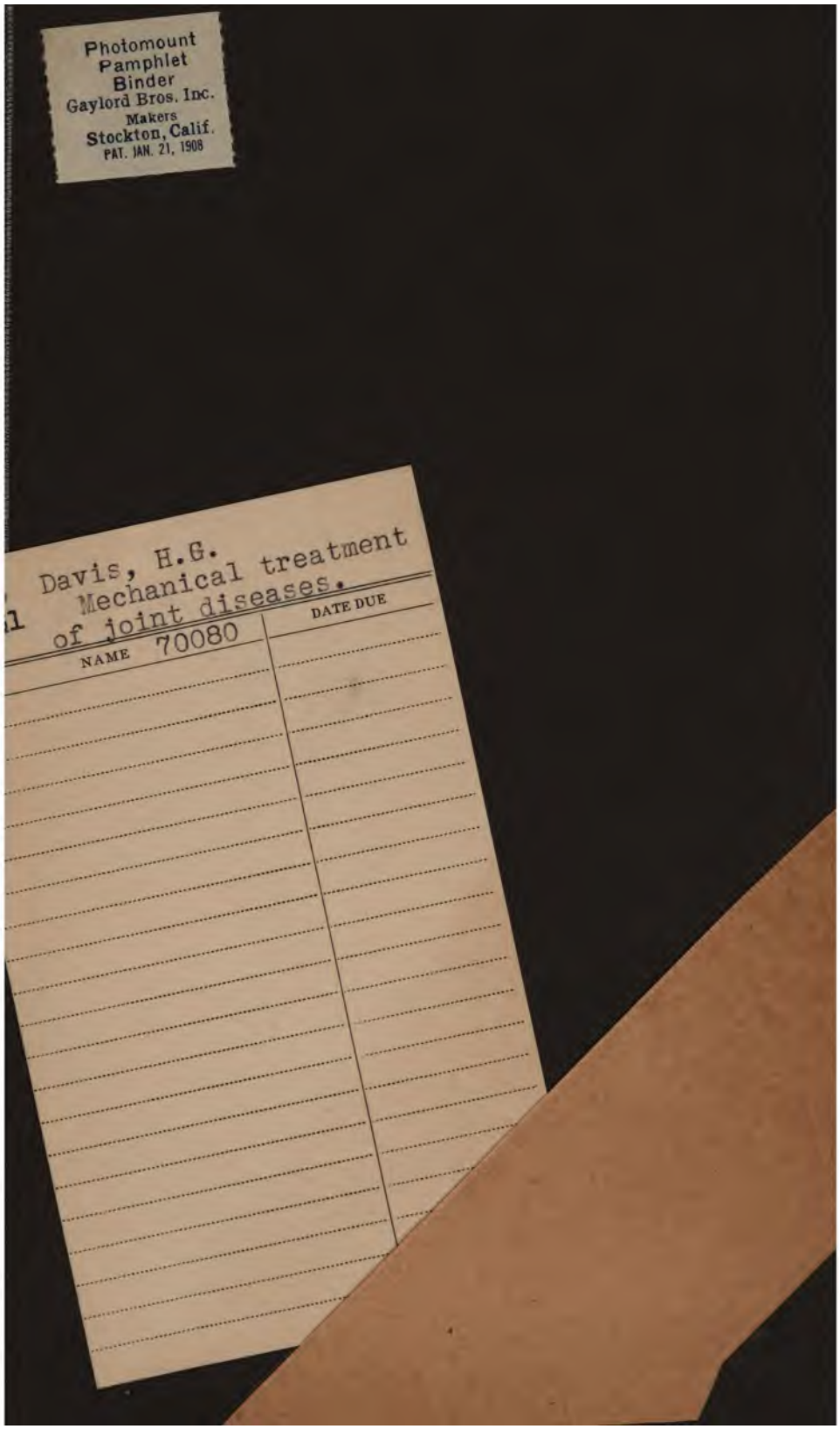
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